America. U.S. of A
Academies etc. Boston.
L Massachusetts Society
3

LAWS AND REGULATIONS, &c.

ACT OF INCORPORATION.

COMMONWEALTH OF MASSACHUSETTS.

In the the year of our Lord, one thouſand ſeven hundred and ninety two.

An Act to incorporate and eſtabliſh a Society by the name of the MASSACHUSETTS SOCIETY FOR PROMOTING AGRICULTURE.

WHEREAS very great and important advantages may ariſe to the community, from inſtituting a Society for the purpoſe of promoting Agriculture, and divers perſons having petitioned to this court to be incorporated into a Society for that laudable purpoſe.

Be it therefore enacted by the Senate and Houſe of Repreſentatives in General Court aſſembled, and by the authority of the ſame, That the ſaid petitioners, viz. Samuel Adams, John Avery, jun. Joſeph Barrell, Martin Brimmer, Charles Bulfinch, John Codman, Edward Cutts, Aaron Dexter, Thomas Durfee, Moſes Gill, Chriſtopher Gore, Benjamin Guild, Stephen Higginſon, Henry Hill, Samuel Holten, Benjamin Lincoln, John Lowell, Jonathan Maſon, Jonathan Maſon, jun. Azor Orne, Samuel Philips, Thomas Ruſſel, Samuel Saliſbury, David

Sears, James Sullivan, Cotton Tufts, Charles Vaughan, and Thomas Winthrop, together with ſuch others who ſhall become members thereof, be, and they are hereby incorporated into, and made a body politic and corporate forever, by the name of the *Maſſachuſetts Society for promoting Agriculture.*

And be it further enacted by the authority aforeſaid, That the ſaid corporation be, and are hereby declared and made capable in law of having, holding, purchaſing and taking in fee ſimple, or any leſs eſtate, by gift, grant, deviſe, or otherwiſe, any lands, tenements, or other eſtate, real and perſonal; provided that the annual income of the ſaid real and perſonal eſtate, ſhall not exceed the ſum of ten thouſand pounds, and alſo to ſell, alien, deviſe, or diſpoſe of the ſame eſtate, real and perſonal, not uſing the ſame in trade or commerce.

And be it further enacted by the authority aforeſaid, That the ſaid corporation ſhall have full power and authority to make, have, and uſe a common ſeal, and the ſame to break, alter, and renew at pleaſure; that it ſhall be capable in law to ſue and be ſued, plead and be impleaded, anſwer and be anſwered unto, defend and be defended, in all courts of record, or other courts or places whatſoever, in all actions real and perſonal and mixed, and to do and execute all and ſingular other matters and things, that to them ſhall, and may appertain to do.

And be it further enacted by the authority aforeſaid, That the ſaid corporation may make, eſtabliſh and put in execution, ſuch laws and regulations as may be neceſſary to the government of ſaid corporation, provided the ſame ſhall in no caſe be repugnant to the laws and conſtitution of this ſtate.—And for the well governing of the ſaid corporation, and the ordering their affairs, they ſhall have ſuch officers as they ſhall hereafter from time to time elect and appoint; and ſuch officers as ſhall be deſignated by the laws and regulations of the ſaid corporation for the purpoſe, ſhall be capable of exerciſing ſuch power for the well governing and ordering the affairs of the ſaid corporation, and calling and holding ſuch occaſional meetings for that purpoſe, as ſhall be fixed and determined by the ſaid laws and regulations.

And be it further enacted by the authority aforeſaid, That the end and deſign of the inſtitution of the ſaid Society is for the purpoſe of promoting uſeful improvements in Agriculture.

And be it further enacted, That the place of holding the firſt meeting of the ſaid Society, ſhall be in the town of Boſton, and that Samuel Adams, Eſq. be, and he hereby is, authorized and empowered, to fix the time for holding the ſaid meeting, and to notify the ſame to the members of the ſaid Society, by cauſing the ſame to be publiſhed in one of the Boſton newſpapers, fourteen days before the time fixed on for holding the ſaid meeting.

In the HOUSE of REPRESENTATIVES, March 7th, 1792. This Bill having had three ſeveral readings, paſſed to be enacted. DAVID COBB, SPEAKER.

In SENATE, March 7th, 1792. This Bill having had two ſeveral readings, paſſed to be enacted.

SAMUEL PHILLIPS, PRESIDENT.

Approved, JOHN HANCOCK.

True Copy, Atteſt,

JOHN AVERY, JUN. SECRETARY.

RULES AND REGULATIONS.

ARTICLE I.

THAT there ſhall be a Preſident, two Vice Preſidents, a Recording Secretary, Correſponding Secretary, and Treaſurer, who ſhall be Truſtees ex officio; in addition to theſe, ſix other Truſtees ſhall be choſen from the members at large, all of whom ſhall continue in office until others are elected in their ſtead.

II. ALL officers, as well as new members, ſhall be elected by ballot. The election ſhall be determined by a majority of votes.

III. THERE ſhall be two ſtated meetings of the Society annually, viz. on the firſt Wedneſdays in April and October, the ſame to be held at 11 o'clock, A. M. at ſuch place as the Truſtees ſhall appoint, of which they ſhall give notice in one of the Boſton newſpapers, at leaſt three weeks previous to ſaid meeting.

IV. THERE ſhall be an annual choice of officers, viz. at the ſtated meeting in April, in the choice of whom, twenty members ſhall be neceſſary to make a quorum; in the tranſaction of other buſineſs, thirteen may make a quorum.

V. IF at any meeting of the Society or of the Truſtees, the Preſident and Vice Preſidents ſhould be abſent, the members preſent may appoint one from among them to preſide at ſuch meeting.

VI. THE Preſident (or in caſe of his abſence) either of the Vice Preſidents, with the advice of the Truſtees, may call a ſpecial meeting of the Society; or whenever written application, with reaſons aſſigned therefor, ſhall be made by any twelve members of the Society, to the Preſident and Truſtees, they ſhall call ſuch meeting.

VII. THE meetings of the Truſtees ſhall be held at ſuch time and place, as they ſhall from time to time agree upon, ſeven of whom, with the preſiding members, ſhall make a quorum for doing of buſineſs, except in the caſe of election of members.

VIII. THE Truſtees ſhall regulate all the concerns of the Society during the intervals of its meetings, propoſe ſuch objects of improvement to the attention of the publick, publiſh ſuch communications, and offer premiums in ſuch form and value as they ſhall think proper, provided the premiums offered do not exceed the funds of the Society; and ſhall lay before the Society at each of its meetings, a ſtatement of their proceedings, and of the communications made to them.

IX. THE candidate for election ſhall firſt be propoſed by a member of the Society, and on being balloted ed for, if the number of votes in favour of ſuch candidate ſhall amount to a majority of the members preſent, ſuch perſon ſhall be conſidered as duly elected.

X. THE Recording Secretary ſhall take minutes of all the votes and proceedings of the Society, and of the Truſtees, and enter them in ſeparate books, and ſhall record all ſuch communications as the Truſtees may direct.

XI. THE Correſponding Secretary ſhall write all letters relating to the buſineſs of the Society, and anſwer all ſuch letters to the Society, as the Truſtees ſhall direct.

XII. THE Treaſurer ſhall receive all monies due or payable to the Society, and all donations that may be made to it, for which he ſhall give duplicate receipts, one of which ſhall be lodged with the Recording Secretary, and make a fair record thereof, and from time to time, pay out ſuch monies that may be in the Treaſury, as he ſhall have orders for from the Truſtees, and ſhall annually, and whenever thereto required, render a fair account of all his receipts and payments, to the Society or a committee thereof. The Treaſurer's accounts ſhall be kept in dollars and cents, and he ſhall give bonds for the faithful diſcharge of his duty, in ſuch ſums as the Truſtees ſhall direct, and with ſuch ſureties.

XIII. A COMMITTEE ſhall be choſen annually to audit the Treaſurer's accounts, viz. at October meeting, and to report thereon, at the next April meeting, and the ſame being accepted, ſhall be entered by the Recording Secretary in his books.

XIV. IN caſe of the death, reſignation, incapacity, or removal out of the ſtate of either of the Secretaries or of the Treaſurer, the Truſtees ſhall take charge of the official books, papers, and effects belonging to the office that may be vacated, and give receipts for the ſame, which books, papers, &c. they may deliver to ſome perſon, whom they may appoint to fill up the office until the next meeting of the Society, at which time there ſhall be a new choice.

XV. The preſent members of the Society, and ſuch as may be elected previous to April meeting, 1793, ſhall for the preſent year ſeverally pay into the hands of the Treaſurer two dollars, for raiſing a fund for carrying into execution the deſigns of the inſtitution ; and thence afterwards two dollars annually ſhall be paid by each member, until otherwiſe ordered by the Society ; the ſecond year to be conſidered as commencing on the firſt Wedneſday in April, 1793.

XVI. A COMMITTEE ſhall be raiſed from time to time, ſeverally to ſolicit and receive ſubſcriptions for raiſing of a fund, for encouraging the nobleſt of purſuits, the agriculture of our country, the ſame to be ſacredly appropriated to that purpoſe.

OFFICERS OF THE SOCIETY.

HON. THOMAS RUSSELL, Eſq. Preſident.
HON. JOHN LOWELL, Eſq. Firſt Vice Preſident.
HON. MOSES GILL, Eſq. Second Vice Preſident.
JOHN AVERY, JUN. Eſq. Recording Secretary.
OLIVER SMITH, Eſq. Correſponding Secretary.
AARON DEXTER, M. D. Treaſurer.
HON. JAMES BOWDOIN, Eſq.
MARTIN BRIMMER, Eſq.
LOAMMI BALDWIN, Eſq.
CHRISTOPHER GORE, Eſq. } Truſtees.
CHARLES VAUGHAN, Eſq.
SAMUEL PARKER, D. D.

THE ADDRESS OF THE TRUSTEES.

THE Truſtees have agreed to meet once in each month, free of any expenſe to the Society, for the purpoſe of receiving communications and promoting the purpoſes of the inſtitution.

It is greatly to be deſired that the community at large, and eſpecially the members of the Society, would engage earneſtly in this buſineſs, would aid its funds, and make communication of any diſcoveries they may deem uſeful, with freedom. The officers of the Society pledge themſelves to pay every attention in their power to the great end intended.

Among other meaſures, they recommend that the members in different parts of the ſtate would meet at ſtated times, in places convenient to themſelves, and invite the aid of others, who are deſirous of forwarding improvements in agriculture; and that they would from time to time, tranſmit to the Truſtees, or any officer of the Society, any information they may think uſeful.

LIST OF PREMIUMS.

1. TO the perſon who ſhall, on or before the firſt day of July, 1795, give a ſatisfactory natural hiſtory of the canker worm, through all its transformations; at what depth in the ground, at what diſtance from the tree, and at what time they cover themſelves; at what ſeaſon, and in what form they riſe from the ground; on what part of the tree they generally depoſit their eggs, and at what time the eggs become worms; a premium of 50 dollars, or a piece of plate of that value, or the Society's gold medal,* at the option of the author. If more than one ſatisfactory hiſtory ſhould be given before the firſt of July, 1795, that firſt received by the Truſtees will be entitled to the premium.

2. A premium of 100 dollars, to the perſon who ſhall, on or before the firſt day of July, 1796, diſcover an effectual, and the cheapeſt method of deſtroying the canker worm, and give evidence thereof to the ſatisfaction of the Truſtees.

3. For the greateſt quantity and beſt quality of compoſt manure, made in one year, with the ſmalleſt expenſe,

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* The Truſtees, expecting that many perſons will engage in agricultural experiments, and become entitled to premiums, who would be more gratified, by the moſt honorable teſtimony of their merit in the power of the Society to confer, than by pecuniary rewards, have voted, that a medal of gold, equal to three guineas weight, emblematically engraved, called the Society's gold medal, be given to them.

penſe, and from a farm of the feweſt acres under culture, and from materials common to moſt farms, provided that the quantity is not leſs than two hundred tons, to be accompanied with a deſcription of the barn yard, or place where made, and the mode of making the manure, a premium of 50 dollars, or the gold medal.

4. And for the next greateſt quantity, not leſs than one hundred tons, 30 dollars; claims to be preſented previous to the firſt day of May, 1795.

5. To the perſon who ſhall diſcover a ſpecies of marl, good as a manure, in ſufficient quantity to become uſeful as ſuch, and exhibit a ſpecimen of the ſame to the Truſtees; for the beſt ſpecimen and largeſt quantity diſcovered, 50 dollars, or a gold medal, at the option of the claimant; claims to be preſented on or before the firſt of May, 1794.

6. To the perſon who ſhall give the moſt ſatisfactory evidence of the beſt kind of wheat, for this climate, and the beſt mode of cultivating the ſame, by actual experiment, on not leſs than one acre of ground, the gold medal; claims to be preſented on or before the firſt of October, 1796.

7. For the largeſt quantity of fat beef, fed upon the feweſt acres of ground, the quantity not being leſs than 80 hundred weight, a premium of 50 dollars, or the Society's medal; and for the next largeſt quantity, not leſs than 40 hundred weight, 25 dollars, or a ſilver medal. A particular deſcription of the ſize of the encloſures, muſt accompany the claim, with a particular deſcription alſo of the mode of fattening; claims to be made previous to the firſt of October, 1795.

8. To the perſon who ſhall give the beſt account, from actual experiments, of the beſt vegetable food, beſide hay, that ſhall increaſe the milk of cows and ewes, during the month of February, March, and April, the gold medal; claims to be preſented previous to the firſt of May, 1795.

9. For the largeſt quantity and beſt quality of wool, that ſhall be ſheared in the ſame year, from the ſmalleſt number of ſheep, not leſs than one ſcore, 50 dollars, or the gold medal.

10. To the perſon who ſhall within the term, of three years, cut, clear, and bring into graſs, the greateſt number of acres of wild land, not leſs than 20 acres; the ſame to be kept clear from bruſh, to be well fenced and ſet off in proper diviſions, 50 dollars; claims to be preſented on or before the firſt day of October, 1796.

11. To the perſon who ſhall produce to the Society, from actual experiments, the beſt and moſt expeditious method of bringing wild land to a ſtate of improvement, and at the leaſt expenſe, for mowing or paſturing, 50 dollars, or a gold medal; claims to be made on or before the firſt of October, 1796.

12. To the perſon who ſhall produce to the Society the beſt and moſt expeditious mode of deſtroying bruſh, without ploughing, 25 dollars; claims to be preſented previous to the firſt of October, 1795.

13. To the perſon who ſhall produce the beſt and moſt expeditious method of making maple ſugar, the manner of collecting the juice, with the leaſt injury to the trees, boiling, clarifying, and completely granulating the ſame, to be accompanied with a particular deſcription of the ſize and different kinds of veſſels uſed, the expenſe and number of perſons required to manage them, a premium of 70 dollars, or the gold medal.

14. It is required that the communications for which the above premiums are offered, be accompanied with proper certificates from the ſelectmen, magiſtrates, or clergymen of the vicinity, or other vouchers to the ſatisfaction of the Truſtees; that they be delivered in without names, or any intimation to whom they belong; that they be ſeverally marked in ſuch manner as each claimant ſhall think fit; the claimant ſending alſo a paper ſealed up, having on the outſide a correſponding mark, and on the inſide his name and addreſs.

By ORDER *of the* TRUSTEES.

OLIVER SMITH, *Cor. Sec.*

May, 1793.

COMMITTEE

COMMITTEE TO RECEIVE SUBSCRIPTIONS.

THE Society have appointed a committee to ſolicit ſubſcriptions, to raiſe a fund, to be diſtributed in premiums for the encouragement of uſeful diſcoveries and improvements, viz.

THOMAS RUSSELL, *Boſton.*
JOHN LOWELL, *Roxbury.*
MOSES GILL, *Princeton.*
AZOR ORNE, *Marblehead.*
COTTON TUFTS, *Weymouth.*
SAMUEL PHILLIPS, *Andover.*
JAMES WARREN, *Plymouth.*
THOMSON J. SKINNER, *Williamſtown.*
TIMOTHY NEWHALL, *Sturbridge.*
WILLIAM BAYLIES, *Dighton.*
LOAMMI BALDWIN, *Woburn.*
JUSTIN ELY, *Weſt Springfield.*
LEVI LINCOLN, *Worceſter.*
CHARLES VAUGHAN, *Boſton.*
DAVID SEARS, *Do.*

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NAMES OF THE MEMBERS.

HON. Samuel Adams, Eſq.
Hon. John Adams, Eſq.
John Avery, jun. Eſq.
Hon. Fiſher Ames, Eſq.
Nathaniel Appleton, Eſq.
Dr. Nathaniel W. Appleton,
John Andrews, Eſq.
Joſeph Allen, Eſq.
Caleb Ammidown, Eſq.
Jonathan Adams.
William Bodman, Eſq.
Joſeph Barrell, Eſq.
Martin Brimmer, Eſq.
Charles Bulfinch, Eſq.
Loammi Baldwin, Eſq.
Thomas Brattle, Eſq.
Samuel Breck, Eſq.
James Bowdoin, Eſq.
Dr. William Baylies,
Hon. Eleazer Brooks, Eſq.
John Brooks, Eſq.
Hon. John Bacon, Eſq.
Benjamin Beals, Eſq.
Moſes Black,
Samuel Baſs, Eſq.
Hon. Samuel Baker, Eſq.
Hon. Ebenezer Bridge, Eſq.
Samuel Blodget, Eſq.
William Billings, Eſq.
Daniel Bigelow, Eſq.
Hezekiah Biſſett, Eſq.—honorary.
Rev. Manaſſeth Cutler,
John Codman, Eſq.
Hon. Edward Cutts, Eſq.
Hon. George Cabot, Eſq.
Andrew Craigue,
Hon. Richard Cranch, Eſq.
Samuel Cary, Eſq.
Samuel Chandler,
Thomas Cuſhing, Eſq.
Hon. Daniel Coney, Eſq.
Gen. John Cutler, Eſq.
Hon. Thomas Durfee,
Dr. Aaron Dexter,

Hon. Francis Dana, Eſq.
Rev. Samuel Dean,
Elias H. Derby, Eſq.
Dr. Samuel Danforth,
Hon. Samuel Dexter, Eſq.
Seth Davenport,
Hon. Samuel Dexter, jun. Eſq.
Col. Thomas Denney,
Juſtin Ely, Eſq.
Hon. Timothy Edwards, Eſq.
George Erving, Eſq.—honorary.
Boſſenger Foſter,
Hon. Samuel Fowler, Eſq.
Dwight Foſter, Eſq.
Samuel Flagg, Eſq.
Simon Frye, Eſq.
Hon. Moſes Gill, Eſq.
Chriſtopher Gore, Eſq.
Hon. Nathaniel Gorham, Eſq.
Hon. Elbridge Gerry, Eſq.
David S. Greenough, Eſq.
Stephen Higginſon, Eſq.
Hon. Samuel Holten, Eſq.
Henry Hill, Eſq.
William Hull, Eſq.
John Hicks,
Rev. John Homer,
Hon. William Heath, Eſq.
Dr. Ebenezer Hunt,
Samuel Henſhaw, Eſq.
His Excellency John Hancock, Eſq.
Hon. Daniel Howard, Eſq.
Thomas Hale, Eſq.
Artemas How,
Hon. Joſeph Hoſmer, Eſq.
Hon. Jonathan Jackſon, Eſq.
Charles Jarvis, Eſq.
Leonard Jarvis, Eſq.
John C. Jones, Eſq.
John Jenks,
Col. Joſeph Jones,
Benjamin Joſlyn, Eſq.
Thomas Ives, Eſq.
Iſrael Jones, Eſq.
Nathan Jones, Eſq.
Danforth Keyes, Eſq.
Martin Kingſley, Eſq.
Hon. Benjamin Lincoln, Eſq.
Hon. John Lowell, Eſq.
Levi Lincoln, Eſq.
Capt. George Lane,
Thomas Legate, Eſq.
Joſeph Lee, Eſq.
Thomas Lee, Eſq.
John Lucas, Eſq.
Hon. George Leonard, Eſq.
Solomon Lovell, Eſq.

Theodore Lyman, Eſq.
Dr. Lettſom—honorary.
Lazarus Le Barron,
Hon. Samuel Lyman, Eſq.
William R. Lee, Eſq.
John Mears,
Nehemiah Munroe,
Jonathan Maſon, Eſq.
Jonathan Maſon, jun. Eſq.
Abner Morgan, Eſq.
Hon. Eliſha May, Eſq.
John Mycall, Eſq.
William Martyn, Eſq.
Col. John Morgan—honorary.
Rev. Dr. David McClintock—hon.
Pliny Merrick, Eſq.
Hon. Timothy Newell, Eſq.
Dr. George Oſgood,
Hon. Azor Orne, Eſq.
Col. Samuel Ogden—honorary.
Hon. Samuel Phillips, Eſq.
Hon. Robert Treat Paine, Eſq.
Charles Phelps, Eſq.
Archilaus Putnam, Eſq.
Rev. Dr. Samuel Parker,
Rev. Phillips Payſon,
Capt. William Putnam,
William Dandridge Peck,
Hon. John Pitts, Eſq.
Samuel Pitts,
Thomas Palmer, Eſq.—honorary.
Col. Andrew Peters,
Timothy Pickering, Eſq.—honorary.
Hon. John Pickering, Eſq.
Ebenezer Peirce, Eſq.
Nathaniel Paine, Eſq.
Joſeph Ruſſell, jun.
John Read, Eſq.
Nathaniel Ruſſell,
Hon. Thomas Ruſſell, Eſq.
Edward H. Robbins, Eſq.
Benjamin Read, Eſq.
Moſes Cheney Read, Eſq.
Samuel Saliſbury,
David Sears,
Hon. James Sullivan, Eſq.
Hon. Increaſe Sumner, Eſq.
Dr. Oliver Smith,
Jonathan Simpſon,
Hon. John Sprague, Eſq.
Hon. Theodore Sedgwick, Eſq.
Hon. Caleb Strong, Eſq.
Hon. William Seaver, Eſq.
Capt. Iſaac Smith,
Hon. David Sewall, Eſq.
Hon. William Sheppard, Eſq.

Hon. Thompſon J. Skinner, Eſq.
Samuel Sewall, Eſq.
Rev. Charles Stearns,
Ephraim Spring,
Joſiah Stearns, Eſq.
Hon. Simeon Strong, Eſq.
David Smead, Eſq.
James Sprout, Eſq.
Hon. Cotton Tufts, Eſq.
Iſrael Thorndike, Eſq.
Dudley Atkins Tyng, Eſq.
Nathaniel Tracey, Eſq.
Salem Towne, Eſq.
Bezaleel Tafts, Eſq.
Iſaiah Thomas, Eſq.
Charles Vaughan, Eſq.
Henry Van Schaack, Eſq.
Hon. J. B. Varnum, Eſq.
Capt. Phineas Upham,
Parker Varnum, Eſq.
Benjamin Upton, Eſq.
Hon. Oliver Wendell, Eſq.
David Wood, Eſq.
James Winthrop, Eſq.
William Winthrop, Eſq.
Thomas Winthrop,
Hon. James Warren, Eſq.
Joſeph Ward, Eſq.
Capt. Ebenezer Wales,
Dr. John Warren,
Dr. Thomas Williams,
Henry H. Williams,
William Wetmore, Eſq.
Hon. Jonathan Warner, Eſq.
Samuel Waldo,
Marſton Watſon, Eſq.
Dr. Benjamin Waterhouſe,
Ebenezer Waters,
Arthur Young, Eſq.—honorary.
William Young.

The following Gentlemen have been added to the Committee for receiving Subſcriptions, viz.

Hon. DAVID SEWALL, Eſq. *York.*
ELIAS HASKET DERBEY, Eſq. *Salem.*
SAMUEL HENSHAW, Eſq. *Northampton.*
DUDLEY ATKINS TYNG, Eſq. *Tyngſborough.*
HENRY VAN SCHAACK, Eſq. *Pittſfield.*
SAMUEL WALDO, *Portland.*
Rev. JONATHAN HOMER, *Newtown.*

On the MANAGEMENT *of the* DAIRY, *particularly with reſpect to the* MAKING *and* CURING *of* BUTTER.

By J. ANDERSON, L. L. D. F. R. S. &c.

[Extracted from the ſixth article in the fifth volume of the Letters and Papers of the Bath Agricultural Society.]

WHEN a dairy is eſtabliſhed, the undertaker ought to be fully acquainted with every circumſtance reſpecting the manufacture both of butter and cheeſe; here it is only propoſed to treat of the manufacture of butter. The firſt thing is to chooſe cows of a proper ſort; among this claſs of animals it is found by experience, that ſome kinds give milk of a thicker conſiſtence and richer quality than others. In judging of the value of a cow, it ought rather to be the quantity and the quality of the *cream* produced from the milk in a given time, than the quantity of the milk itſelf; this is a circumſtance of more importance than is generally imagined. The ſmall cows of the Alderney breed afford the richeſt milk hitherto known; but individual cows in every country, may be found, by a careful ſelection, that afford much richer milk than others; theſe therefore ought to be ſearched for with care, and their breed reared with attention, as being peculiarly valuable. In comparing the milk of two cows, to judge of their reſpective qualities, particular attention muſt be paid to the time that has elapſed ſince their calving. To make the cows give abundance of milk, and of a good quality, they muſt at all times have plenty of food.—Graſs is the beſt food yet known for this purpoſe, and that kind which ſprings up ſpontaneouſly on rich dry ſoils, is the beſt of all. If the cows are ſo much incommoded by the heat as to be prevented from eating through the day, they ought to be taken into cool ſhades for protection; where, after allowing them a proper time to ruminate, they ſhould be ſupplied with abundance of green food, freſh cut for the purpoſe, and given them by hand frequently, freſh and freſh in ſmall quantities, ſo as to induce them to eat it with pleaſure.

Cows, if abundantly fed, ſhould be milked three times a day during the whole of the ſummer ſeaſon, in the morning early, at noon, and in the evening juſt before night fall. If cows are milked only twice in twenty four hours, while they have abundance of ſucculent food, they will yield a much ſmaller quantity of milk in the ſame time, than if they be milked three times. Some attentive obſervers I have met with, think a cow in theſe circumſtances, will give nearly as much milk at *each* time, if milked three times, as if they were milked only twice. In the choice of perſons for milking the cows, great caution ſhould be employed, for if *all* the milk be not thoroughly drawn from a cow when ſhe is milked, a diminution of the quantity gradually takes place, and in a ſhort time the cow becomes dry. In the management of a dairy, the following peculiarities reſpecting milk, ought very particularly to be attended to; ſome of them are, no doubt, known in part to attentive houſewives, but they have never been conſidered of ſo much importance as they deſerve.

APHORISM I.

OF the milk that is drawn from any cow at one time, that which comes off at the firſt is always thinner, and of a much worſe quality, than that which comes afterwards, and the richneſs goes on, continually increaſing to the very laſt drop that can be drawn from the udder at that time.

Few perſons are ignorant that milk which is taken from the cow laſt of all at milking, which in this country is called *ſtroakings*, (here *ſtrippings*) is richer than the reſt of the milk; but fewer ſtill are aware of the greatneſs of the diſproportion between the quality of the firſt and the laſt drawn milk from the ſame cow at one milking—from ſeveral accurate and important experiments it appears, that the perſon who, by bad milking of his cows, looſes but half a pint of the laſt milk that might be obtained, looſes in fact, about as much cream as would be afforded by ſix or eight pints at the beginning, and looſes beſides, that part of the cream, which alone can give richneſs and high flavour to his butter.

APHORISM II.

IF milk be put in a diſh and allowed to ſtand till it throws up cream, that portion which riſes firſt to the ſurface is richer in quality and greater in quantity than what riſes in a ſecond equal portion of time, and the cream that riſes in the ſecond interval of time is greater in quantity and richer in quality than what riſes in a third equal ſpace of time, and ſo on, the cream decreaſes in quantity and declines in quality continually, as long as any riſes to the ſurface.

APHORISM III.

THICK milk always throws up a ſmaller proportion of the cream it actually contains to the ſurface, than milk that is thinner, but that cream is of a richer quality; and if water be added to that thick milk, it will afford a conſiderably greater quantity of cream than it would have done if allowed to remain pure; but its quality is at the ſame time greatly debaſed.

APHORISM IV.

MILK, which is put into a bucket or other proper veſſel, and carried in it to any conſiderable diſtance, ſo as to be much agitated, and in part cooled before it be put into the milk pans to ſettle for cream, never throws up ſo much nor ſo rich cream as if the ſame milk had been put into the milk pans directly after it was milked.

In this caſe, it is believed that the loſs of cream will be in proportion to the time that has elapſed and the agitation it has ſuſtained after having been drawn from the cow.

From the above facts the following corollaries ſeem to be clearly deducible.

1. It is of importance, that the cows ſhould be always milked as near the dairy as poſſible, and it muſt be of great advantage in a dairy farm, to have the principal graſs fields as near the dairy as poſſible.

2. The practice of putting the milk of all the cows of a large dairy into one veſſel, as it is milked, there to remain till the whole milking be finiſhed, before any part of it be put into milk pans, ſeems to be highly injudicious, not only on account of the loſs that is ſuſtained by agitation and cooling, but alſo, as it prevents the owner of the dairy from diſtinguiſhing the good from the bad cows milk; a better practice therefore, would be, to have the milk drawn from each cow ſeparately, put into the creaming pans as ſoon as it is milked, without being mixed with any other.—Thus would the careful farmer be able, on all occaſions, to obſerve the particular quality of each individual cow's milk, as well as its quantity, and to know with preciſion, which of his cows it was his intereſt to diſpoſe of, and which he ought to keep and breed from.

3. If it be intended to make butter *of a very fine quality*, it would be adviſeable in all caſes to keep the milk, that is firſt drawn, ſeparate from that which comes laſt, as it is obvious, that if this be not done, the quality of the butter will be greatly debaſed, without much augmenting its quantity. It is alſo obvious that the quality of the butter will be improved in proportion to the ſmallneſs of the proportion of the laſt drawn milk that is retained, ſo

that thoſe who wiſh to be ſingularly nice in this reſpect will only retain a very ſmall proportion of the laſt drawn milk.

4. If the *quality* of the butter be the chief object attended to, it will be neceſſary not only to ſeparate the firſt from the laſt drawn milk, but alſo to take nothing but the cream that is firſt ſeparated from the beſt milk, as it is this firſt riſing cream alone that is of the prime quality; the remainder of the milk, which will be ſtill ſweet, may be either employed for the purpoſe of making ſweet milk cheeſes, or it may be allowed to ſtand to throw up cream for making butter of an inferiour quality.

5. From the above facts, we learn that butter of the *very beſt poſſible* quality can only be obtained from a dairy of conſiderable extent when judiciouſly managed.

6. From theſe premiſes, we are led to draw a concluſion different from the opinion that is commonly entertained on this ſubject, viz.——That it ſeems probable that the very beſt butter can only be with economy made in thoſe dairies where the manufacture of cheeſe is the principal object.

As but few perſons would be willing to purchaſe the *very beſt* butter at a price to indemnify the farmer for his trouble, I am ſatisfied from experience and attentive obſervation, that if in general about the firſt drawn *half* of the milk be ſeparated at each milking, and the remainder only be ſet up for producing cream, and if that milk be allowed to ſtand to throw up the whole of its cream, even till it begins ſenſibly to taſte ſouriſh, and if that cream be afterwards carefully managed, the butter thus obtained will be of a quality greatly ſuperiour to what can uſually be obtained at market, and its quantity not conſiderably leſs than if the whole of the milk had been treated alike.

No dairy can be managed with profit, unleſs a place properly adapted for keeping the milk, and for carrying on the different operations of the dairy, be firſt provided.*—The neceſſary requiſites of a good milk houſe are, that it be cool in ſummer, and warm in the winter, ſo as to preſerve a temperature nearly the ſame throughout the whole year, and that it be dry, ſo as to admit of being kept clean and ſweet at all times.

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* The author here gives a very particular deſcription of the beſt contrived milk houſe or dairy.

From the trials I have made, I have reaſon to believe that when the heat is from fifty to fifty five degrees on Farenheit's thermometer, the ſeparation of the cream from the milk, which is the moſt important operation of the dairy, goes forward with the greateſt regularity. When the heat exceeds ſixty degrees, the operations become difficult and dangerous, and when it falls below the fortieth degree, they can ſcarcely be carried forward with *any degree* of economy, or propriety.

In winter, ſhould the cold become too great, it might be occaſionally diſpelled, by placing a barrel full of hot water cloſely bunged up, upon the table, to remain till cooled. This I prefer to any kind of chaffing diſh with burning embers.

The utenſils of the dairy, muſt in general be made of wood. As the acid of milk readily diſſolves lead, with which the common earthen veſſels are glazed, ſuch veſſels ſhould be baniſhed from the dairy.

The creaming diſhes (for ſo I call the veſſels in which the milk is placed for throwing up the cream) when properly *cleaned*, *ſweet* and *cool*, are to be filled with the milk as ſoon after it is drawn from the cow as poſſible, having been firſt ſtrained carefully through a cloſe ſtrainer.

Theſe diſhes ſhould never exceed three inches in depth, whatever be their other dimenſions. As ſoon as they are filled, they are to be placed on the ſhelves in the milk houſe, perfectly undiſturbed, till it be judged expedient to ſeparate the cream from them.

In a moderately warm temperature of the air, if very fine butter be intended, it ſhould not be allowed to ſtand more than ſix or eight hours; for ordinary good butter, it may ſafely ſtand ten or twelve, or more.

It is of great importance to the ſucceſs of the dairy, that the *ſkimming* be well performed, for if any part of the cream be left, the *quantity* of the butter will be diminiſhed; and if any part of the milk be taken, its *quality* will be debaſed.*

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* The cream ſhould be ſeparated from the edges of the diſh, by means of an ivory bladed knife, then carefully drawn towards one ſide by a ſkimming diſh, and then taken off with great nicety.

When the cream is obtained, it ought immediately t be put into a veſſel by itſelf, there to be kept till a prope quantity be collected for being made into butte And no veſſel can be better adapted to that purpoſ than a firm neat made wooden barrel, in ſize proportione to the dairy, open at one end, with a lid exactly fitted t cloſe it. In the under part of this veſſel, cloſe to the bottom, ſhould be placed a cock and ſpigot, for drawing o any thin ſerous part of the milk that may chance to b there generated; for if this is allowed to remain, it injure the cream, and greatly diminiſhes the richneſs of the quality of the butter; the inſide of the opening ſhould b covered with a bit of gauze netting, to keep back the crea while the ſerum is allowed to paſs, and the barrel ſhoul be inclined a little forward, to allow the whole to run off.

The ſeparation of butter from cream, only takes plac after the cream has attained a certain degree of acidity. The judicious farmer will therefore allow his cream t remain in the veſſel until it has acquired that prope degree of acidity that fits it for being made into butte with great eaſe, by a very moderate degree of agitation, and by which proceſs only, very fine butter ever can b obtained. How long cream may be thus kept in ou climate, without rendering the butter made from it of a bad quality, I cannot ſay; but it may be kept good for a much longer time than is generally ſuſpected, even a grea many weeks.—It is certain that cream which has bee kept three or four days in ſummer is in an excellent condition for being made into butter; from three days to ſeven may in general be found to be the beſt time for keepin cream before churning.

I prefer the old faſhioned upright *churn*, having a lon handle, with a foot to it perforated with holes, as it admit of being better cleaned, and of having the butter mor eaſily ſeparated from the milk than any others.

Where the cream has been duly prepared, the proceſ of butter making is very eaſy; there is however more nicety required than moſt perſons ſeem to be aware of; a fe *haſty, irregular ſtrokes,* may render the butter of ſcarcel any value, which, but for this circumſtance, would hav been of the fineſt quality. The butter when made, mu be immediately ſeparated from the milk, and being put into a clean diſh, the inſide of which, if of wood, ſhould be well rubbed with common ſalt. The butter ſhould be preſſed and worked with a flat wooden ladle, having a ſhort handle, ſo as to force out *all* the milk that was lodged in the cavities of the maſs. The beating up of the butter by the hand is an indelicate and barbarous practice. If the milk be not entirely taken away, the butter will infallibly ſpoil in a ſhort time, and if it be much waſhed, it will become tough and gluey. Some perſons employ cold water in this operation; but this practice is not only uſeleſs, but alſo pernicious, becauſe the quality of the butter is thus debaſed in an aſtoniſhing manner. In every part of the foregoing proceſs it is of the utmoſt importance, that the veſſels and every thing elſe about the dairy, be kept perfectly ſweet and clean.

Wooden veſſels are the moſt proper for containing ſalted butter. Oak is the beſt wood for the bottom and ſtaves. Broad ſplit hoops are to be preferred to all others.

Iron hoops ſhould be rejected, as the ruſt of them will in time ſink through the wood, and injure the colour of the butter. To ſeaſon a new veſſel for the reception of ſalted butter, requires great care: It ſhould be filled *frequently* with ſcalding water, allowing it to remain till it ſlowly cools. After the butter has been cleaned from the milk, as before directed, it is ready for being ſalted. Let the veſſel be rendered as clean and as ſweet as poſſible, and be rubbed all over in the inſide with common ſalt; and let a little melted butter be run into the cavity between the bottom and the ſides at their joining, ſo as to fill it, and make it every where fluſh with the bottom and ſides: It is then fit to receive the butter. Common ſalt is almoſt the only ſubſtance hitherto employed for preſerving butter. I have found by experience that the following compoſition is in many reſpects preferable to it, as it not only preſerves the butter more effectually from any taint of rancidity, but makes it look better and taſte ſweeter and more marrowy, than if the ſame butter had been cured with common ſalt alone. The compoſition is as follows:

Take

Take of ſugar one part, of nitre (ſalt petre) one part, and of the beſt Spaniſh great ſalt, two parts; beat the whole into a fine powder, mix them well together, and put them by for uſe.

Of this compoſition, one ounce ſhould be put to every ſixteen ounces of butter: Mix this ſalt thoroughly with the butter; as ſoon as it has been freed from the milk, and put it, without loſs of time, into the veſſel prepared to receive it, preſſing it ſo cloſe as to have no air holes, or any kind of cavities within it; ſmooth the ſurface, and if you expect it will be more than two days before you add more, cover it cloſe up with a piece of clean linen, and over that a piece of fine linen that has been dipped in melted butter, that is exactly fitted to the edges of the veſſel all round, ſo as to exclude the air as much as poſſible, without the aſſiſtance of any watery brine. When more butter is to be added, remove the coverings, and let the butter be applied cloſe above the former, preſſing it down, and ſmoothing it as before, and ſo on till the veſſel is full. When full, let the two covers be ſpread over it with the greateſt care, and let a little melted butter be poured all round the edges, ſo as to fill up every cranny, and effectually *exclude the air*. A little ſalt may then be ſtrewed over the whole, and the cover firmly fixed down, to remain cloſely ſhut till opened for uſe. If this be carefully done, the butter may be kept perfectly ſound in this climate for many years.*

It muſt be remarked that butter cured in this manner, does not taſte well till it has ſtood at leaſt a fortnight after being ſalted. After that period is elapſed, it eats with a rich marrowy taſte that no other butter ever acquires. Butter thus cured, will go well to the Eaſt or Weſt Indies.

Butter, in its natural ſtate, contains a conſiderable proportion of mucous matter, which is more highly putreſcible than the pure oily parts of the butter. When it is intended to be expoſed to the heat of warm climates, it ought to be freed from that mucilage before it be cured and packed up. To do this, let it be put into a veſſel of a proper ſhape, which ſhould be immerſed in another containing water. Let the water be gradually heated till the butter be thoroughly melted: Let it continue in that ſtate for ſome time, and allow it to ſettle: The mucous part will fall to the bottom, and the pure oil ſwim at top. When it cools, it becomes opaque and paler than the original butter, and of a firmer conſiſtence. When this refined butter is become a little ſtiff, and while it is ſtill ſomewhat ſoft, the pure part ſhould be ſeparated from the dregs, and then ſalted and packed up in the ſame way as is before directed.

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* The Epping butter is called the beſt in England. The farmers make uſe of a very innocent colouring matter for their winter and early ſpring butter, which is the juice of carrots. They take clean and freſh carrots, and grate them fine, and ſqueeze out the juice through a coarſe cloth, and mix it with their cream. This gives their butter as fine an appearance as the beſt June butter, without communicating any taſte or flavour.

Thoſe who wiſh to ſee the ſubject more fully treated, are referred to the original.

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An ACCOUNT *of the* MANNER *of* MAKING CHEESE *in* ENGLAND.

[*By Mr.* TWAMLEY.]

IN this ſecond great object of the dairy, the ſame precaution as with regard to the butter, is neceſſary, viz. The cows ought not to be driven violently before milking, and every utenſil muſt be kept equally clean.

The moſt common defects of cheeſe are, its appearing, when cut, full of ſmall holes, called eyes; its puffing up, cracking, and pouring out a quantity of thin whey; becoming afterwards rotten and full of maggots in thoſe places where the whey appeared. All theſe difficulties proceed from a ſubſtance called *ſlip curd*, a kind of half coagulum, incapable of a thorough union with the true curd, and which, when broken into ſmall bits, produces eyes, but if in larger pieces, occaſions thoſe rents and cracks in the cheeſe already mentioned; for though this kind of curd retains its coagulated nature for ſome time, it always, ſooner or later, diſſolves into a ſerous liquor. This kind of curd may be produced by uſing the milk too hot, by bad runnet, or by not allowing the curd a proper time to form. The firſt may be remedied by the uſe of cold water. The ſecond, by good runnet, a knowledge of which can only be acquired by long practice. The only rule that can be given for its preparation is, to take out the ſtomach of a calf, rince it in cold water, and rub it well with ſalt and dry it. It may be uſed immediately on drying, though it is conſidered beſt after it is a year old. The beſt method of making the runnet is, to take one gallon of pure ſpring water and boil it; then make it into brine with clean ſalt, ſufficiently ſtrong to bear an egg; let it cool to about blood heat. Two of the ſkins (or what are commonly in this country called runnet bags) muſt be put into the brine, either cut in pieces, or whole, as is moſt convenient; they muſt ſteep twenty four hours; after which, it is fit for uſe. About a tea cup of a middling ſize, of the liquor, will be ſufficient for the milk of ten cows.

In making cheeſe, ſuppoſing the runnet of a good quality, the following particulars muſt be obſerved.

1. The proper degree of heat: This ought to be what is called milk warm, which is conſiderably below the warmth of milk taken from the cow. If too hot, it may be reduced by cold water, without any injury to the cheeſe.

2. The time allowed for the runnet to take effect: This ought never to be leſs than one hour and a half.

3. After having the curd firmly formed at the bottom of the tub, the whey muſt be taken away, and the curd muſt ſtand to drain one quarter of an hour.

If any pieces of ſlip curd are found ſwimming in the whey, they ſhould be poured off with it, rather than be admitted into the cheeſe. Some dairy women allow their curd to ſtand two hours, to obtain a firmneſs that will require no breaking; but the beſt method is to break it thoroughly, for the cheeſe is leſs apt to be hard.

4. The beſt method to prevent cheeſe from heaving, is to avoid making the runnet too ſtrong, to take care that

it be very clean, and by no means the leaſt tainted, to be certain the curd is fully formed, which is known by the blue colour of the whey, and by no means to ſtir it till the air has had time to eſcape.

5. The beſt method to prevent the cracking of cheeſes, is to ſalt them in the milk, or after the cheeſe is formed, which may be done with much more certainty than in the curd, which is a bad method.

6. Dry cracks in cheeſe are frequently produced by keeping curd from one meal to another, by which means the firſt becomes too dry and hard, ever, without great attention, to mix intimately with the ſecond.

7. Curdly, or what is commonly called wrinkle coated cheeſe, is always cauſed by ſour milk. Cheeſe made of cold milk is apt to be hard and fly before the knife. If the weather is cold, cheeſe ſhould be kept warm, particularly when firſt made.

8. Slip coat, or ſoft cheeſe, is made entirely of ſlip curd, and will diſſolve into a kind of creamy liquor, which is ſufficient proof of the nature of this kind of curd, as already mentioned. It is generally computed, that as much milk is required to make one pound of butter, as two pounds of cheeſe.

It is remarked by dealers in cheeſe, as well as other perſons, that much the greateſt part of the people that eat cheeſe have no idea how it is produced. They finding the beſt cheeſe of a yellow colour, naturally conclude that cheeſe of a pale colour muſt be made of inferiour or ſkimmed milk, whereas the colour is artificial. The principal ingredient uſed for colouring cheeſe is the beſt Spaniſh annatto (or what is commonly called in this country, otter) which gives cheeſe the beautiful colour of the beſt ſpring butter, without injuring the taſte or quality in any degree. The beſt method of uſing it is, to take a piece and dip it into a bowl of milk, and waſh off from the piece ſufficient to give the milk a deep colour. Then mix the coloured milk with the milk prepared for the cheeſe, before either runnet, or ſalt is put in. If enough annatto has been uſed, the whole milk will have a pale orange colour, which will be much increaſed after the cheeſe is made.

June, 1793.

To the CORRESPONDING SECRETARY *of the* MASSACHUSETTS AGRICULTURAL SOCIETY.

SIR,

THE following obſervations were drawn up at the requeſt of a gentleman for his own uſe. If the Agricultural Society ſhould think that the contents afford any uſeful hints, I ſhall be gratified with having contributed ſomething towards the improvement of one branch of that art, which is the moſt independent and one of the moſt honourable purſuits of man.

I do not ſend it to you from an opinion that I have the beſt information upon the ſubject, but that, by a communication of each ones experience, improvement goes forward with rapidity.

I am, Sir,

Your moſt obedient Servant,

ALEXIS.

To Mr. ——— ———

SIR,

AGREEABLE to your requeſt, I have collected the following obſervations upon the method of making cheeſe. They are what aroſe during an experience of but two years. The intention was to have reduced this uſeful part of rural economy to a regular ſyſtem, which in this country is left to the operation of chance. This ſheet contains but little originality in the principles of this art; they were taken from treatiſes written in England. If any merit is due, it is for the attention with which theſe obſervations were purſued, to aſcertain the eſſential parts of theſe treatiſes. This art appears ſo ſimple, that every country woman would be offended at being thought ignorant of it; yet a few rules may be collected that require to be obſerved with almoſt a chymical exactneſs. They know that runnet will make a curd: A piece is therefore cut off at hazard and thrown into the milk. If too ſmall a piece is put in, the curd comes very imperfectly, producing what is called ſlip curd. This is very ſoft, and the curd thus made, is what is moſt frequently ſold for *cream cheeſe.* In breaking up the curd, or preſſing, this is chiefly ſqueezed out. That which remains is one cauſe of eyes in cheeſe. The fatteſt part of the milk is moſt difficult to coagulate, and it is found, that adding more runnet will not perfect the curd, when in this ſtate; the cheeſe is of courſe impoveriſhed, when the curd comes imperfectly. But the moſt frequent errour is putting too much runnet, which inevitably gives the cheeſe a ſtrong pungent taſte and ſmell. It occaſions that puffing in cheeſe which is called *hove cheeſe*, and being pierced with a knife, will emit a very fetid ſmell. It is a degree of putrefaction ariſing from a fermentation cauſed by the runnet; a ſufficient evidence that the cheeſe can never be good, and is invariably full of eyes. Another cauſe of bad cheeſe is bad runnet; and whoever has ſeen many of our country kitchens, will wonder that they ever have good cheeſe, owing to the very filthy manner of keeping the ſkins, being either impregnated with ſmoak, or tainted with flies, and expoſed to every diſagreeable effluvia that may ſurround it. To obviate theſe difficulties, the following is the manner that the runnet was prepared in my dairy. Take the ſkin, or runnet bag, as ſoon as the calf is killed; let it be carefully cleaned by hand without touching water; let it then be put into a brine ſo ſtrong that it will diſſolve no more ſalt; of this brine three pints will ſuffice for a ſkin; let it be ſteeped in it 36 hours or thereabouts; it may then be taken out of the liquor, put into clean bottles and corked; it will keep a year, perhaps longer; the ſkin may then be drawn over a bow, ſalted and dried as uſual; in two or three months, if your liquor ſhould fail you, it may be ſteeped again. It is ſaid to acquire new ſtrength, but not ſo much as at firſt; perhaps the virtue is not wholly extracted by the firſt ſteeping, and that it will not yield it all to three pints of water. This ſecond operation will, however, anſwer as good a purpoſe as the firſt, uſing two or three ſkins inſtead of one. Let one general obſervation be made, that throughout the whole buſineſs of darying, the greateſt attention muſt be paid to the cleanlineſs and ſweetneſs of the veſſels uſed, and in the dairy room; and in ſome inſtances es it may not be unneceſſary to recommend it to the dairy-woman in her own perſon. In cheeſe of *one meal*, the milk ſhould be kept as near as poſſible to its natural heat, till the runnet is put in. I find three tea ſpoons full to a gallon of milk to be the average quantity required to coagulate it; but this liquor ſhould always be tried, to aſcertain its ſtrength. The object is to find the ſmalleſt quantity that will bring the curd properly, as more than that will injure the cheeſe. You will perceive that it is convenient to make a large quantity of this liquor at a time, or making it at different times in the ſpring, when you begin to make cheeſe, which is ſeldom till all the calves are killed, let it be mixed and then tried, after which there is no trouble with the runnet; and you may be certain that whatever other defect the cheeſe may have, it will not be ſtrong, or hove; this is ſolely owing to the too great quantity or bad quality of the runnet. My cheeſe tub being made of the ſame diametre at the top and bottom, I found its contents in gallons, and made a guaging rod, marking on the depth of the tub, and then ſubdividing that depth by the number of gallons the tub contained. By putting the rod into the tub, was readily ſeen the gallons of milk in it. The tub itſelf might be thus graduated; when you would make ſervants follow rules, it is neceſſary that they ſhould be attended with as little trouble as poſſible. Having put in the runnet, *the milk ſhould not be ſuffered to cool too ſoon, as the curd ſhould be ſenſibly warm when broke up and put into a hoop*, otherwiſe the cheeſe will be in flakes when cut, the curd not uniting when cold. *The curd muſt not be diſturbed in the tub, till it cleaves from the ſides and begins to ſettle.* It may then be cut through chequerwiſe and ſuffered to ſettle ſtill more; with a proper temperature of air it will begin to ſettle in half an hour from the time of ſettling the milk; cold weather retards it and may defeat it; if the curd is too long in coming, the cream begins to riſe and is loſt to the cheeſe; it ſhould therefore be guarded againſt. There riſes upon the whey, when the curd ſettles, a thin ſkim, which ſhould be carefully removed before the curd is taken out, leſt it ſhould mix with the curd. As it is of a more fixed nature than the whey, it will not all ſqueeze out, nor will it blend with the curd, and where a particle remains there will be an eye. The curd, being well drained of the whey, by breaking it up fine by hand, is to be ſalted. This is an important part, and of which I am not ſo well informed as I wiſh to be. The ſucceſs of experiments with ſalt can only be determined by the taſte, and this cannot always be done, when the cheeſe is ſold. Salt differs greatly in ſtrength and quality, as is well known to fiſhermen and packers of beef. In Ireland the beef is firſt ſtrongly rubbed with blond ſalt, which is mild and penetrating. It is then paſſed to another hand, who uſes a mixture of blond and bay ſalt, which is harſh and drying, hardening the proviſions. From this conſideration of the different effects of ſalt, it may be concluded that bay ſalt is not adapted to cheeſe. I alſo took bay ſalt and diſſolved it, and then boiled it down; the objectionable parts fly off; and the more violent the ebullition, the finer will be the grain, which indicates its ſtrength, the large grain being the ſtrongeſt. I liked the ſalt thus obtained, the grain being as fine as well ground meal. Some of my beſt cheeſes were made with this ſalt, and the quantity uſed was one tea cup heaped, to ſix gallons of milk. This proportion is liable to errour, as milk will yield more or leſs curd according to the ſeaſon or quality of the graſs; and let it be remembered that cows ſhould never be drove hard, eſpecially juſt before milking. If the common blond ſalt is uſed, it ſhould be reduced finer by pounding, that it may more intimately blend with the curd.—The curd being prepared for the preſs, it appears to me proper that every heterogeneous ſubſtance ſhould immediately be preſſed out. For this purpoſe my firſt preſs was powerful, being a lever eight feet long, one end fixed by a pin between two ſtumps ſet in a bench; near theſe ſtumps, was placed the cheeſe; the other end of the lever was loaded with about two hundred weight of ſtones; at the other end of the bench were fixed two ſtumps higher than thoſe firſt mentioned, which are about ſix inches higher under the lever than the cheeſe hoops; the other ſtumps have a croſs piece on the top to reſt another lever, which is hooked to the end of the firſt to raiſe it. The cheeſe being tended as uſual in this preſs, where it re-

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mained twenty four hours, was moved to another bench containing four diviſions, being each ſeparate preſſes of no more weight than was immediately laid upon them, about two hundred weight. The cheeſe when taken from the firſt preſs, was put into preſs at one end of this ſecond bench, and remained in each twenty four hours, moving along every day till arrived at the other end. I ſuppoſe three days preſſing on this ſecond bench, ſufficient for a cheeſe of twenty five pounds. It was then carried to the cheeſe room. Screw preſſes are objectionable, as the preſſure does not follow the cheeſe as it ſettles. My farm houſe was fortunately ſhaded by trees; but the better to guard againſt the ſun, I had Venetian ſhades made for the windows, of clapboards painted green, which were cheap and handſome. I alſo had made ſlender frames, over which catgut was ſtretched of a texture fine enough to prevent the entrance of flies. When the windows were opened theſe frames were put in. The cheeſe room ſhould be expoſed on every ſide except the ſouth, and one or more windows in each ſide. Attention is much required to regulate the temperature of the air; ſtrong wind admitted will dry the cheeſe too faſt, and make it crack; to prevent this, it is cuſtomary with us, to rub the cheeſe with butter; in England they waſh it with the new whey, and no butter is uſed; this laſt method I did not try. In hot ſultry weather cheeſe will ſpread. This ſhould be prevented by bandages of tow cloth, or by putting them into cheeſe hoops. The expenſe of this extraordinary number of hoops is not great: One cheeſe ſaved, will pay for ten hoops, and they laſt many years. They will ſeldom ſpread after they have been made a month. In wet weather it is adviſeable to burn a little charcoal in the chimney of the cheeſe room. The quantity of green cheeſe obtained from milk, was from twenty three pounds to twenty five pounds, from twenty gallons. I have got twenty ſeven and three quarters from eighteen gallons. They ſeldom loſt in drying more than two and a half pounds, in a cheeſe of twenty five pounds weighed green from the preſs. If it is required to have the cheeſe of a Glouceſter colour, take Spaniſh anatto, rub a lump in a ſaucer with milk; a little experience will teach the quantity neceſſary for a cheeſe; then mix it with the reſt of the milk, when it is ſet for cheeſe. One ounce will colour four or five hundred pounds, and it is bought of the apothecaries. It is perfectly innocent, and I thought that the cheeſe coloured with it, was higher flavoured: This might have been owing to other cauſes. To have a good dairy, it muſt be a particular buſineſs, and not attended only at convenient intervals from other work, as a ſecondary object, nor ſhould a drop of cream be taken from milk appropriated for cheeſe. This muſt be inviolably obſerved. I think that large cheeſes generally prove better than ſmall ones; and for this reaſon ſhould not wiſh to make a cheeſe leſs than twenty five pounds. But if the number of cows is not ſufficient to make a cheeſe of one meal, the old milk ſhould be very well mixed with the cream that has riſen, and then put into a large braſs kettle to warm over coals free from ſmoke, the milk being frequently ſtirred to prevent the bottom of the milk becoming too hot before the top is ſufficiently warmed, which will be the caſe without attention. It ſhould be brought as near as poſſible to its natural heat. To ſave trouble our women heat a part very hot, then mix it with the cold; but I have no doubt that this injures the cheeſe. Putting the milk into deep veſſels, and covering them in a damp ſituation, will prevent the cream from riſing ſo much as it otherwiſe would.

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[From LETTERS and PAPERS on AGRICULTURE, publiſhed at HALLIFAX.]

To the SECRETARY *of the* AGRICULTURAL SOCIETY, *at* HALIFAX.

THE intention of the Society being ſo obviouſly of the firſt importance to this country, I am induced to requeſt that the following obſervations may be communicated to the next meeting.

Every day's experience evinces that our ſoil is good, yet, ſuch is the coldneſs of the climate, that when land has been improved three or four years without manure, it grows moſſy, and afterwards produces but little: There are few countries, therefore, where the article of manure can be more profitably attended to, becauſe, when well prepared, it not only repleniſhes the earth with food for vegetables, but by its warmth counterbalances the coldneſs of the climate. As what has been written on this ſubject is in the hands of but few, I have endeavoured to bring together the opinions of the moſt modern authors, which from my own experience I can recommend to the practice of the farmers in this country, remarking at the ſame time, upon the improper uſe which too many make of their dung. Lime, Marl, Plaiſter of Paris, &c. &c. are good, and ſome of them perhaps the beſt of manures: But it is not in every one's power to procure them, eſpecially in ſuch quantities as are neceſſary for the farmer: But a COMPOST is within the reach of every perſon, and almoſt in any quantities, and which no prudent perſon, upon knowing its uſefulneſs, will ever be without.

There is perhaps no one practice in huſbandry more injudicious than that of taking new dung from the yard, in the ſpring, and uſing it as a manure for potatoes, ſpread over the ground, or in any other way whatever, as it introduces graſs, weeds, and noxious plants, which more than balances any little benefit that it can poſſibly do as a manure when uſed in that unprepared ſtate.

When new dung lies in large heaps it ſoon grows very hot, and a violent putrid fermentation comes on, which melts the whole into one common maſs, reverſing what took place in vegetation, bringing that matter which has been the ſubſtance of former vegetables into ſuch a ſtate, that it will become the food for ſucceeding vegetables: But when it is put in ſmall quantities in the hills of potatoes, or ſpread on the ground and plowed in, even if it had begun to grow hot and ferment, it will immediately be cooled by the ſurrounding earth. In order to keep alive that heat which is neceſſary for its putrefaction, or rotting, it muſt be kept in large heaps. Let any one ſpread new dung over the ground, and in a week's time, if the weather is dry, it will look little better than dry ſtraw; he will now find it has loſt more than half its weight, and with that a large proportion of its real riches. In this ſtate I have often found it in hills of potatoes in a dry ſeaſon, where it manifeſtly did more hurt than good, by keeping the roots from the moiſt earth: If after this it rots, yet it never can recover that which it has loſt by its rich moiſture being rarified and evaporated by the ſun. It ſhould therefore be ſuffered to lie in ſome convenient place in a body together; by which means its moiſture is preſerved, a ſuitable degree of heat generated, and a univerſal putrefaction takes place, turning every part of it into proper manure or food for vegetables: For in its crude ſtate it can ſcarcely be called a manure, but only ſomething of which a manure may be made, becauſe there is no part of it but what muſt be diſſolved by putrefaction before it can yield much vegetable food; hence it comes to paſs that if the ſeaſon proves wet ſoon after it is uſed, it does ſome good, as it affords a little nouriſhment by being putrified from the wetneſs of the ſeaſon; but ſhould the ſeaſon prove dry, no putrefaction can take place, ſo, that of courſe, it affords no nouriſhment to vegetables, but does real hurt by keeping the ground too open and hollow in the hills where it is put. Yard dung, then, ſhould never be uſed 'till it has been in a proper ſituation for fermentation and putrefaction, one year at leaſt; by this means the ſeeds of graſs, weeds, or noxious plants, will moſtly periſh, and the dung by its putrefaction, be ſtored with great quantities of proper food for vegetables, poſſeſſing thoſe qualities which tend to meliorate and enrich the land. To accompliſh this plan in the ſpring, it ſhould be put into the place where it is intended the general compoſt heap ſhould be made. For this purpoſe a hollow place ſhould be choſen; and if it cannot otherwiſe be had, it ſhould be dug large enough to hold the quantity of manure intended to be made. If a place can be taken ſo ſituated as to receive the waſh of the dwelling houſe, cow yard, hog ſty, &c. ſo much the better. It muſt be clayed all over its bottom and ſides. Drains muſt be cut from the loweſt part of the cow yard, and hog ſty, into the place prepared to receive the compoſt, ſo that whatſoever is waſhed out of them by rains may be carried directly into the compoſt heap. All kinds of weeds from the ſides of fields, where they often do much hurt, by ſhading and drawing the nouriſhment from plants that grow near them, may be pulled and thrown in: And in hoeing where the land is weedy, ſmall children might often be employed to good advantage in gathering up the weeds after the hoers, and throwing them in heaps; by which they would be prevented from taking root again, the land would lie clean, and cart loads might in that way be gathered. Sprouts alſo pulled from the ſtubs in new ground, when they are in a ſucculent ſtate, before they grow woody or hard (which by the way is the beſt time to ſprout new ground) may be thrown in heaps and carted in: Rock weed, kelp, and all ſorts of ſea weed or graſs, may be carried in great quantities, where they can be had; garbage of fiſh, hair, blood, bones, woolen rags, oyſter ſhells, muſcles, and every kind of animal ſubſtance, are excellent, and capable of making more than four times their own weight of good manure; aſhes, ſuch as are made by burning buſhes, may all be thrown in, and it is better to gather ſome of the earth with them, than to leave any of the aſhes, as the top of the earth in thoſe places is often almoſt as much impregnated with ſalts as the aſhes themſelves; aſhes that have been leeched are alſo good; the dung in the cow yard ſhould be removed every morning into a heap by the ſide of the yard; by this means the yard is kept clean, and the dung is kept from drying, and as often as there is enough may be carted to the general heap. If the farmer has not the conveniency of a hog paſture, but is obliged to keep his hogs in a ſty, he will find it for his intereſt to throw in great quantities of green weeds, graſs, &c. as it will ſave more coſtly feeding, and in this caſe the ſty ſhould be often cleared and its contents carried to the general heap. To a compoſt heap, made of ſuch materials, conſiderable earth may be added; but then it ſhould be well choſen; any place where the waſh of a road or ſtreet is brought to ſettle, is excellent, and mud may often be taken from ſettling places in a road, and dry earth put in its place, to the great advantage both of the road and him who takes it; half a hundred loads of good loam, and even more, where there is a large yard and many cattle, may be carried into a cow-yard in the ſpring of the year, and be wholly carried into the compoſt heap by the fall, taking off the top at ſeveral different times. In Holland and ſome parts of Germany, they are at great pains to ſave the urine of their cattle for manure, and find it of conſiderable conſequence; by the above method it is all effectually preſerved, which, together with the hot ſteam and perſpiration of their bodies, whilſt lying upon the loam, ſo far enrich it as to render it a very valuable addition to the compoſt heap. The compoſt ſhould be turned up from the bottom once or twice in a ſummer, which will greatly forward its fermentation and putrefaction; and towards the fall, when the ſeeds of weeds and graſs begin to be ripe, it is beſt to move the compoſt all to one end, that ſuch rubbiſh as abounds with ripe ſeeds, may be put by itſelf and lie round to another year. At the fall, when the crops come in, conſiderable addition may be made by carrying in all the vines, ſtalks, &c. of every kind of vegetable from the garden; alſo, potatoe tops and turnip tops, if not wanted for cattle; theſe laſt make a manure of a very excellent kind. All the chaff from the ſeveral kinds of grain that may be raiſed—every kind of damaged or rotten ſtraw or hay, or old ſtack bottoms, &c. may come in, in the courſe of the year, with every thing that is capable of a quick putrefaction.

Such as can afford it, will find their account in having a ſhed built over their compoſt heap, yet it muſt be open and expoſed to the air on all ſides, for by ſuch expoſure not only the putrid fermentation will be forwarded, but much will be drawn from the air, eſpecially if there be any aſhes in the heap, which will greatly increaſe the richneſs of the compoſt; yet a covering at the top will be very neceſſary, otherwiſe the rains will not only greatly check the fermentation, by too often cooling it; but will probably, when they come plentifully, cauſe it to overflow its banks, and carry off the rich juices of the compoſt; alſo, without ſuch a ſhed it might ſuſtain damage by having its moſt ſubtle and volatile parts evaporated by the ſun. I have indeed ſeen compoſt heaps, without clay at the bottom, or a ſhed at the top; but, that much is loſt from ſuch a heap by all its waſhings in the courſe of the year, is too manifeſt to need any thing ſaid upon it. It is true, that in this way of putting all his new dung into the compoſt heap, the farmer muſt go a year without manure, if he has not that which is old and good by him; but when once he has his compoſt heap fit for uſe, after that he has his manure as regularly every year, as thoſe who follow the pernicious practice of waſting their new dung, (I can call it nothing better, for it often does hurt); and he who follows the above method, or ſomething like it, will ſoon find that from one acre of land, well manured, he can raiſe more than he can from two without manure, ſo that one half his labour will be ſaved; the labour and pains that he has been at in making manure, will be returned with ample increaſe into his barn and ſtores, and his farm at the ſame time increaſing in riches.

Thoſe who have a good ſtock of cattle, hogs, &c. may, in ſome ſuch way as the above, increaſe their manure to almoſt any quantity they ſhall need: And ſuch as have no cattle (and there are doubtleſs ſome ſuch among our new ſettlers) may, in the above way, make conſiderable manure in the courſe of the year, from the waſh of the houſe only; and ſuch manure is good, and will produce cucumbers, peas, beans, &c. quicker than good yard dung. To conclude, the more any one attends to the affair of manuring his farm, the eaſier and more elegantly it will ſupport him; whilſt, without that, upon ſuch land and in ſuch a climate as we have in this country, an induſtrious man may, after a courſe of years, find that all his labour hath been in vain.

Feb. 20, 1790. A FARMER.

EXPERIMENTS *to determine whether it is beſt to plant* LARGE *or* SMALL CUTTINGS *of* POTATOES.

[*By the Rev. Mr.* COCHRAN.]

IN the Nova Scotia Magazine* for December, 1789, there appeared ſome extracts from an Eſſay on Potatoes,

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* Vol. I. page 454.

toes, publiſhed among the Papers of the Bath Agricultural Society, for 1788. In theſe a prodigious difference is noticed, between the produce from large cuttings and that from ſmall, in favour of large ones, *as nine to one.*

That a conſiderable difference of produce might eſcape the obſervation of mere practical farmers, who ſeldom make comparative experiments, is readily to be ſuppoſed, and that, therefore, it might ſtill be a diſputed point amongſt them, whether large or ſmall cuttings are moſt profitable, as the author who relates thoſe experiments aſſerts it is, and as we know it to be here. But we can hardly ſuppoſe that any farmer, who ſhould ſee one acre in his neighbour's field produce as much as nine in his own, would continue inattentive to the advantage of uſing larger ſeed.

In the extracts, where this amazing diſproportion of produce is mentioned, it is not ſtated what proportion the cuttings, uſed in the one and in the other caſe, bore to each other. Probably there was a greater difference than between thoſe which are commonly uſed here. However, if the loſs by planting ſmall cuttings ſhould only be one half, or even one fourth part of that mentioned above, ſtill it would be an object highly deſerving the attention of farmers. I thought, therefore, it might not be a uſeleſs experiment, to try two or three different ſizes of cuttings, near to thoſe uſually planted in this neighbourhood, and to mark the difference of produce, if any.

For this purpoſe, in the ſecond week of June laſt, I took an equal number of cuttings, of three different ſizes; the largeſt (No. 1.) were ſomewhat larger than thoſe uſually planted here. The ſecond ſize, which I ſhall call No. 2, was leſs than one half of No. 1. The third ſize (No. 3.) was about one third of No. 2.*

I planted 100 hills with each ſize, four cuttings in each hill. The land, manure, and cultivation as nearly alike as I could make them.

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* The cuttings of each ſize were weighed, and the weight noted at the time of planting, but the memorandum has been miſlaid. However, although I cannot recollect the abſolute weight, I am certain the proportion to each other was, very nearly, as above.

From the firſt appearance of the plants, a ſtriking difference, in favour of the largeſt ſize, was obſervable. Many of the hills from No. 1, had ten, twelve, or fourteen ſtalks, ſtrong and healthy. Thoſe from No. 2, much fewer and weaker. Thoſe from No. 3, in many inſtances had not more than four ſtalks, and thoſe ſmall and feeble. The difference, though ſtill very perceptible, was not ſo great toward the end of the ſummer, as at the beginning.

In the beginning of November they were all taken up, and the produce weighed.

No. 1,	produced	280lbs.
No. 2,		249½
No. 3,		168

The medium weight of a buſhel, upon ſeveral trials, was found to be 61lb. Therefore the produce of No. 1, was ſomething above four buſhels and a half; and the difference between No. 1, and No. 3, nearly two buſhels. This is very conſiderable. If an acre planted with cuttings ſuch as No 1, would produce two hundred buſhels, by planting ſuch as No. 3, the farmer will looſe 80 buſhels. In four acres the loſs will be 320 buſhels; in eight acres, which many farmers plant in a ſeaſon, it will be 640 buſhels!

I am informed, that ſome farmers in the province plant only the *eyes* of their potatoes, and give the reſt to their cattle or hogs. With theſe the loſs muſt be ſtill greater.

* * *

[From Letters and Papers on Agriculture, publiſhed at Halifax.]

On the UTILITY *of* INTRODUCING *the* GENERAL CULTIVATION *of* RED CLOVER *in this Province.*

[*By* William Cottnam Tonge, *Eſq.*]

AMONGST all the late improvements in the agriculture of Great Britain, which have brought the ſcience ſo near to perfection in that country, the introduction of red clover may be ranked as one of the principal and moſt important; the uſe of this valuable crop, and turnips, has nearly baniſhed the practice of employing unprofitable fallows as a preparation for crops of grain. The farmers of Great Britain uſe clover not only as the herbage for laying their lands down to meadow, but alſo as a part of their arable ſyſtem; experience teaching them, that the cultivation of it, is one of the beſt courſes that can be purſued for preparing land for the raiſing wheat.

The introduction and general uſe of this crop, would, I am convinced, be equally beneficial to this country; to the circumſtances of which it appears every way perfectly adapted.

It is a poſition, which I conceive will be univerſally aſſented to, that this province can never become rich or flouriſhing, until its inhabitants can accompliſh the raiſing of their own bread corn; and to this great object, the views of all, who wiſh the proſperity of the country, and particularly thoſe who are employed in cultivating its lands, ſhould be invariably directed.

The cauſes of the preſent deficiency are not to be ſought in the climate and ſoil of the country, but may be eaſily diſcovered in the injudicious and improper management of the inhabitants. The reaſon that more wheat is not raiſed in this province, is, that more land is not prepared for that grain; and it is a fact well known to thoſe who are acquainted with the general practice, that much wheat is ſown without any previous preparation of the land; the crops being ſuch as might be expected from ſuch management.

The complaints made againſt this country, as unfavourable for wheat, are founded in ignorance or prejudice; the crops of that grain in many parts of it palpably contradicting ſuch aſſertions, as does the judgment of men, who have had experience in agriculture in other countries as well as this. The chief real natural diſavantage that the province labours under, is, the ſhortneſs of the ſeaſon for performing the ſeveral works of agriculture; this circumſtance may forbid the uſe of that extenſive tillage which is practiſed under more favourable climates, but does by no means extend to prevent every farmer from raiſing his own bread and a ſurplus for ſale; the aggregate of which ſurplus will form a fund not only for the ſupply of thoſe who are not employed in the cultivation of lands, but alſo for exportation, which I cannot relinquiſh the hope of ſeeing take place from this country.

As the ſhortneſs of our ſeaſon may prevent us from availing ourſelves of many modes of preparing our lands, which are practiſed under different climates, we ſhould unqueſtionably be more attentive to the uſe of thoſe which are peculiarly adapted to our own; and the cultivation of clover appears to me one of the moſt important of theſe, not at preſent in uſe.

We cannot advantageouſly cultivate turnips (one of the great ground works of modern huſbandry in England) to any conſiderable extent, becauſe our climate will not allow of our feeding them through the winter, and the labour of getting them up and ſtoring them, would make them too expenſive; but no ſuch objection lies to the uſe of clover, which may without loſs of time, or additional expenſe (except the ſeed) follow our hoeing crops with the wheat, which uſually ſucceeds them, and would by lying two years in the ground, prepare it in the moſt perfect manner for another crop of that grain, producing in the mean time moſt beneficial returns for the land it occupies. By the uſual mode of management, wheat is procured but once, after a perfect manuring with potatoes, or other hoed crops (unleſs by the execrable method of ſowing it two ſeaſons ſucceſſively) it being uſually followed by two crops of oats, which diveſt the ſoil of all its richneſs; the land is then turned out to graſs, producing little or nothing but weeds until time has reſtored it to fertility, being unfit for the production of wheat, without another manuring, or laying a great length of time in paſture; whereas, by ſowing clover ſeed with the wheat, following a hoed crop, the land is made to produce two valuable crops of hay and graſs, and is rendered in the higheſt degree fit for the reception of wheat; for let the ground be in any degree rich, on which clover is ſown, the deep penetrating roots and long ſhadowy tops of this plant are ſure to increaſe its richneſs, and bring it to that mellow ſtate, ſo favourable to the growth of that grain.

On the whole, I moſt earneſtly recommend to my brother farmers the uſe of this plant, the cultivation of which will ſo much increaſe the quantity of their wheat lands.

The great obſtacle to the adoption of it, is the coſt of ſeed (if purchaſed); and many have been deterred from raiſing it by the difficulties they have experienced in attempting to get it cleaned from the huſk; but the firſt objection may be obviated by purchaſing but a ſmall quantity of the beſt Engliſh ſeed, for a ſtock to raiſe more from; and the difficulty of cleanſing ſeed may be removed by attending to the following circumſtance, which is, that in raiſing clover, to ripen ſeed, it is neceſſary to feed down, or mow the firſt growth in the ſpring (which tends wholly to ſtalks, leaves and chaff), not letting it grow up till near midſummer; by this means the ſtalks will be ſhort and thick, will have few leaves on them, and will be covered with large heads well filled with ſeed, which parts eaſily from the huſk.

A member of this ſociety (Mr. Burton) who firſt mentioned this circumſtance to me, has raiſed as fine clover ſeed in this way as any imported from England, and will doubtleſs communicate to any perſon, deſirous of information, the methods he took to clean it.

A NEW METHOD *of* CULTIVATING *and* PREPARING HEMP.

[*By the* ABBE BRALLE.]

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IT is ſufficiently known, that land intended for a crop of hemp muſt be well manured, well ploughed, cleanſed, and gotten fine; and the ſeaſon being arrived; which varies much according to the ſoil, weather, and conveniency of the cultivator, extending from the 25th March to the 15th June; ſow the hemp ſeed, which ought always to be new ſeed, thin, not exceeding two buſhels to an acre, and if you have the advantage of a drill plough, ſtill leſs will do. After the land is ſown, go through the whole with a ſhovel, and with it make little paths at ſeven feet diſtance from each other, the length way of your piece, ſo that at the proper ſeaſon you may reach the female hemp which you will have occaſion to pull out, without trampling on the male, which muſt ſtand at leaſt a month longer to ripen its ſeed. The female hemp, (which is that which bears only flowers and no ſeed) is known to be ripe by the flowers fading, the farina fœcundas falling, and *ſome* of the ſtems turning yellow. You muſt then draw out carefully the whole of the female hemp, breaking as little as poſſible the ſtems of that which you take, or that which you leave.

Immediately as it is gathered, take it in as large handfuls as you can, and either cutting the roots off, or leaving them on, as you like beſt (I prefer cutting them off) hold the root end uppermoſt, and with a wooden ſword dreſs off the flowers and leaves, which you leave in the field, ſince they aſſiſt in manuring; pick out any weeds or ſpoilt plants; put twelve handfuls, or gripes, together to make a bundle; then lay the bundles in water; it is much the beſt to be a running and clear water, and if ſhaded and overhung with trees the better; lay poles, or planks, or whatever elſe you have that is ſuitable, acroſs a large number together, ſo as to keep them at leaſt two inches under water. Take particular notice which you lay in firſt, and how you lay the bundles, in order that you may be able to get them out again ſucceſſively as they were laid in, without breaking or tangling. At the end of ſix days, viſit the hemp, and ſee whether the reed will draw out from ſome of the bundles. The time required for ſoaking depends very much on the nature of the hemp, the weather, and of the water it is ſoaked in—from ſix days to nine, or even to eleven. It is a trouble that is not ill beſtowed to ſort the hemp for ſoaking, if it is of unequal ſizes, the ſlendereſt generally requiring moſt ſoaking.

When you find any quantity ſufficiently ſoaked, take it with care, putting the hands under it to prevent breakage, and tranſport it to a trough or to a table; for there are two methods of working it. If you work it in a trough, you muſt be provided with one ſomewhat longer than any hemp that you mean to work in it—twelve, or fourteen inches deep, and of what width you think proper according to the number of perſons you employ at it, as one, two, or four. To this trough muſt be fitted two pieces of plank, of about a foot length, but of ſuch width as to ſtretch over a bundle of the hemp as it lies open in the water: Theſe planks muſt be ſet on one ſide with teeth of braſs wire, and when the hemp is ready for drawing, muſt be laid on it as it lies in the water, to keep it ſtraight and immerged.

If you work the hemp on a table, you muſt, before taking it out of the water, open a little the bundles, and rub the ſtems between your hands to get off what you can of the ſlime, and to looſen the rind. You muſt likewiſe puſh the bundle along in the water, with the looſe end foremoſt, to looſen the rind at that end where the operation is to be begun. If you do not thus rub and ſcour your hemp in the water where you ſoak it, you muſt do it in the trough. But in either caſe you muſt be careful to keep an even and ſteady hand to avoid breaking the reed, which, as many times as it happens, renders the operation of getting the reeds out tedious. If it is wrought on the table, the bundle muſt be frequently though ſlightly wetted. If any ſuitable method could be taken to make water drip gently on it, it would be beſt. A plank muſt be laid on the bundle to keep it ſteady.

All matters being properly diſpoſed, either on the table or in the trough, you muſt begin at the root end to puſh back a little of the rind from the ſtem; then taking hold of one ſtem at a time, and rather near the outſide than the middle of the bundle, keep your hand and the reed under water (if you work in a trough) and draw it out from the bundle as ſtrait as poſſible, you will find it come out as clean as a ſword from its ſcabbard. As you proceed, you may take two, afterwards four, up to ſix or more reeds at a time, which will draw out ſtill more eaſily. When you have drawn out all the reeds that you can find at the root end, lift up the ſpiked plank which was at the upper end, leaving on that which was in the middle, and draw out ſuch pieces of *reed* as you may find at the upper end, and which have remained after drawing out what you could at the root end, becauſe they were broken. Laſtly, take off the plank which lay on the middle, and take out all the relicks of reed you can perceive. If your hemp was in good condition for drawing, you will find all your reeds perfectly clean on the floor, and the rind, which is the hemp, lying in ſtrait threads, in the water or on the table.

You will perceive that among the hemp there is a great quantity of gum left, looking like a jelly; this you will waſh out as if you were waſhing any long ſtrait piece of cloth, obſerving not to diſplace, or twiſt the threads, which would thwart the future operation of dreſſing, or heckling. The finer and whiter you deſire the hemp to be, the more waters you will run it through, ſqueezing it out at each time of waſhing; but I think it *always* right at the laſt to run it through a water in which a ſmall quantity of ſoft ſoap has been beat up, after the rate of an ounce of ſoft ſoap to three pounds of the hemp when dry. Do not ſqueeze it out from this ſoap water, but hang it to drain, and when a little ſtiffened, open a little the bundle, and lay it to dry on a graſs plat, or floor; the former is preferable. This ſoap water is not abſolutely neceſſary, but is certainly of great uſe for ſoftening the hemp, and rendering it pleaſant and eaſy to dreſs; but may be diſpenſed with where it is very inconvenient, and where the hemp is intended for coarſe purpoſes. It is obvious that all theſe operations would be carried on to the moſt advantage near to ſome running ſtream, or large lake, if it be a ſtanding water, on account of the great uſe that is made of that element, and to ſave a great deal of the trouble of tranſportation.

When thus dried, the hemp is proper either for dreſſing, or ſtoring; if the latter, particular care muſt be taken that it be thoroughly dry, it will otherwiſe heat and ſpoil. As the hemp peculiarly intended to be hitherto ſpoken of is the female, or flower bearing hemp, which is intended for fine uſes, it is to be obſerved that it muſt be worked with heckles, or hatchels, ſuch as are uſed for flax dreſſing, and may be brought to an extreme fineneſs; and the ſhorts, having no pieces of ſtraw, or reed among them, may be carded and ſpun, and brought into uſe for all the ſame purpoſes as cotton, and the ſame methods uſed for bleaching and ſoftening. It is likewiſe requiſite to work this hemp as ſoon as pulled, without which the greateſt ſoftneſs and whiteneſs cannot be obtained; and as this ſort generally falls ripe between hay time and harveſt, when the weather is warm and fine, and the women moſt at liberty, it will be a ſuitable occaſion to draw and cleanſe the hemp—the dreſſing may be reſerved for winter.

I now proceed to ſpeak of the male hemp, which being a more conſiderable crop, cannot all be worked as faſt as it is pulled or cut. It is known to be ripe enough by the ſtems becoming pale; for if you ſtay till the tuft containing the ſeed appears ripe, or the ſtem turns brown, the hemp will be in a great meaſure ſpoiled. When it is come to a proper maturity, you muſt get a good number of hands, ſo as to expedite the buſineſs, becauſe ſuch as remains ſtanding after it is ripe, will have its rind fixed to the reed, the gum turned hard and dark coloured, and the whole operation of drawing becomes difficult, troubleſome, and ungrateful. The leaves are to be ſtripped off with a wooden ſword, in the ſame manner as thoſe of the female hemp, as are likewiſe the ſeed, the branches which grow laterally, and even the tuft bearing ſeed at the top: But if this latter ſhould not come off clean, it muſt be chopt off with an iron inſtrument. All this muſt be done over a cloth, or on a ſpot of ground in the field, well levelled and ſmoothed, to avoid loſing any of the ſeed. And it is propoſed, and ſaid to be ſucceſsful, to leave the ſeed abroad, covered with the leaves and chaff ſtrewed on the land. This certainly ſaves trouble, and is practiſed in many parts, but ſeems to me ſlovenly, and I would rather take it home to a barn; but I would certainly burn all the roots, and ſuch parts as are too hard to rot eaſily, and ſtrew the aſhes as well as the leaves, and ſuch other parts as will eaſily rot, upon the ground, as theſe matters are reckoned to go half way towards manuring the land for next year's crop. The male hemp, thus ſtript of leaves and ſeed, will generally dry for ſtoring in twenty four hours; but at any rate muſt not be left long abroad, but rather taken into ſheds to dry, which, when thus ſtript, it will ſpeedily do. Sun and rain would ſoon ſpoil it. That which can be wrought green muſt be treated as before ſet forth for the female hemp; and it is obvious that it is a great advantage

to

to work it in this manner, rather than to dry and ſtore it, which cauſes much trouble and expenſe and produces leſs and worſe hemp; but where the crop is conſiderable, and the hands few, it is unavoidable. If, however, much rain comes, it is impracticable to dry it for ſtoring without ſpoiling, as every year's experience ſhews in the preſent received method; whereas the working the hemp green entirely avoids this diſadvantage and inconveniency, and the hands engaged may continue their employment under the ſhelter of trees, or of a temporary ſhed made of a few rough poles and hurdles, covered with ſtraw, reeds, &c.

All the ſame procedure is to be uſed with the male, as with the female hemp, as to drawing, ſcouring, &c. but as the reeds of it are leſs brittle, and the rind coarſer, it requires more ſoaking, but is eaſier to draw, and produces much more and ſtronger hemp. What is ſtored muſt, when wanted to be wrought, be ſoaked, peeled, waſhed, and in general treated as before ſaid. In cold weather it takes long ſoaking.

Detached Obſervations on Hemp.

IT is capable of being cultivated on all kinds of land; the poorer land producing the hemp finer in quality, though ſmaller in quantity, and the rankeſt land producing ſtrong and long, though coarſe; and this ſort being the eaſieſt to draw and work in the new mode, the quantity of manure requiſite in the firſt inſtance is not above half of that for wheat, and the ſubſequent years, not above half that half, and the hemp ſtill improving in quality. All the work in the new method, not excepting the dreſſing, is fitter for women than men, and may be practiſed advantageouſly by every cottager.

No bleaching is wanted for the linen made of hemp prepared in the new method; and it is certain, that if the hemp be fine, well managed, and dreſſed with the fineſt flax hackle, it may ſuperſede almoſt all the uſes of flax, which flax is a more uncertain and leſs abundant crop, requires more culture and better land, which it exhauſts; whereas hemp grounds increaſe in goodneſs. If the male hemp intended for cords has been treated with little attention, and but little ſcoured, or bleached, the ſhorts which come from it in dreſſing may be ſcoured over again, to render them more uſeable. The hackle, and even the hemp itſelf, may be a little oiled in the dreſſing, which will much facilitate that buſineſs, and inſtead of fouling, will rather aſſiſt in bleaching the threads, when they come to be waſhed.

Both the dreſſing and ſpinning of hemp are beſt carried on in a damp place. Hemp is naturally inclined to twiſt too much in ſpinning.

The greateſt injury that can befal hemp, is that of ſun baking. But after all, the greateſt injuries that can be done to hemp, the new operation may be performed on it; though with little ſucceſs, yet ſufficient to render it better than that which is procured by any other operation, whereof I have, at this moment, the proof under my eye. The greateſt whiteneſs can never be procured but by working it green. If ſtored, the greener it is got in, the whiter it will be. The more the colour is changed, the worſe will be the colour of the thread.

Fifteen pounds of male hemp may be gotten off in a day, by one perſon; only ſeven pounds, of female. It is neceſſary to pick the hemp plants over at ſeveral different periods, in order to avoid having any bad ſtems among the good, which might ſpoil a whole parcel, eſpecially if intended for fine linen.

There is great reaſon, from a ſlight attempt that has been made, to think that a dye might be procured from the water in which the hemp is ſcoured, after that it is gotten off from the reed.

It is likewiſe thought that an inſtrument may be imagined for drawing the reeds from the threads or rind, or elſe the rind or threads from the reed, more expeditiouſly. A few bundles have been cleaned with a common rake.

In France it is common, at the time of pulling the female hemp, to ſcatter turnip ſeeds in among the ſtems of the male hemp, which are left ſtanding, and theſe turnips frequently produce a good deal of feed for ſheep or cattle after the male hemp is taken off. It is obvious that whatever

ever has this effect, has, beſides the benefit of ſupporting the ſtock of a farm, that of aiding to manure the hemp grounds, eſpecially if it be ſheep that are fed on it; therefore if this method fails, it would be prudent, immediately as the hemp is off the ground, to plow it up, and ſow turnips, cole ſeed, rye, or any other thing proper for ſheep feed, which can be gotten off early in the next ſpring, ſo as to be able to till the land well in time for receiving the hemp ſeed.

It is leſs an injury to the hemp to pull the plants before they are ripe enough, than to leave them too long ſtanding. It is a leſs injury, in ſoaking the hemp, to leave it too long in the water than to take it out before it is ſufficiently ſoaked.

The more the hemp is cleanſed after getting off the reed, the finer it becomes, and the finer dreſſing it requires: Nothing but experience can mark the degrees.

The moſt advantageous time to begin the culture of hemp on any land, is immediately after a crop of turnips; exactly the ſame as if you were about to ſow barley.

The coarſeſt black ſoap, which coſts in France only three pence per pound, will ſuffice for making the ſuds through which the hemp ſhould paſs.

It is aſſerted, from experience, that putting the cluſters containing the hemp ſeeds to ſweat and heat, cauſes many of the ſeeds to come to perfection, which, in the common method, would wither and become dead; and that it of courſe improves both the quantity and quality.

An improved METHOD *of* PRESERVING *the* FINE FLAVOUR *of* BUTTER, *and of* PREVENTING *its* GROWING RANCID.

Communicated to the "Burlington Society for the promoting Agriculture and Domeſtick Manufactures," by their PRESIDENT, and ordered to be publiſhed. From the American Muſeum. Vol. VIII. Page 172.

TO a peck of fine ſalt add one ounce of crude ſal ammoniac, and two ounces of ſaltpetre, both finely powdered:

ed: Mix them very well with the fine ſalt: With this ſalt, work your butter, until the butter milk be entirely extracted. Then pack it in wooden firkins, ſalting it with the ſame mixed ſalt, to ſuch a degree as to be palatable, when eaten with bread, and no ſalter. The mixture is ſtronger than fine ſalt: Of conſequence ſomething leſs is required.

By order of the Society,
W. COXE, JUN. SEC'RY.

DIRECTIONS *for the* MANUFACTURING SUGAR *from the* MAPLE TREE.

[*From the* AMERICAN MUSEUM.]

IF the ſap is drawn into wooden veſſels, care ſhould be taken that they are made of ſuch wood as will not give the liquor a bad taſte. Some maple ſugar has a diſagreeable taſte, occaſioned, as I have been informed, by the ſap having been put into trays made of the white walnut. If the moulds are made of wood, they alſo ſhould be made of ſome kind of tree that will give no taſte. The greateſt part of the maple ſugar I have ſeen, has too ſmall a grain; which is owing to two cauſes; one is, the makers of it do not uſe lime or lye, or any thing elſe, to make it granulate; the other is, that they boil the ſugar too much.—The quantity of lime neceſſary to anſwer the purpoſe, I cannot exactly aſcertain; but I ſuppoſe a heaped ſpoonful of ſlacked lime would be ſufficient for about ſix gallons of ſap. A judicious perſon after a few trials, would be able to fix the due proportion. It may, however, be proper to mention, that if the quantity of lime is too ſmall, the ſugar will not be ſufficiently grained; if too much, it will give the ſugar a reddiſh caſt. I have before obſerved, that the ſugar ſhould not be boiled ſo much as has been the common practice. That, from which runs about one ſixth of its weight in melaſſes, in twenty four hours after it is put to drain, I think, has been boiled properly; perhaps, in three or four weeks afterwards, it will run the like quantity of melaſſes, making the whole of the running about one third the weight of the green ſugar. It is probable that thoſe who have been accuſtomed to high boiling, in order to get as much ſugar as poſſible in the firſt proceſs, will not approve of this method, but perhaps may be better reconciled to it, when they are informed, that if they boil this melaſſes or ſyrup with ſtrong lime water, one third of the latter to two thirds of the melaſſes, there is reaſon to expect it will make good ſugar, although not equal to the firſt ſort.

I ſhall now proceed to give ſome directions for the making of maple ſugar :---Let all the ſap that has been collected in one day, be boiled the day following, leſt it ſhould ferment, in which caſe the ſugar would be leſs in quantity, and worſe in quality. To carry on the buſineſs to the greateſt advantage, there ſhould be three kettles of different dimenſions. Theſe kettles ſhould be fixed in a row, the ſmalleſt at one end, the middle ſized next, and the largeſt at the other end.—When there is a quantity of ſap collected, put as much in the largeſt kettle as can be conveniently boiled in it ; then throw in as much lime or lye as may be deemed neceſſary to make the liquor granulate. Keep a moderate fire for ſome time, and as the ſcum riſes, take it off with a ſkimmer ; after the liquor is pretty clear, increaſe the fire and boil it briſkly, 'till ſo much is evaporated, as that which remains may be boiled in the middle kettle ;* into which the liquor muſt be ſtrained through a blanket ; under this kettle, keep a good fire, and take off the ſcum as it riſes. As ſoon as the liquor is taken from the large, and put into the middle kettle, freſh ſap muſt be put into the former, and treated as before directed, and ſo on, till all the ſap is boiled.

When the liquor is ſufficiently evaporated in the middle kettle, to admit its being boiled in the ſmalleſt, it muſt be put into the laſt, where it muſt be boiled, until it gets to a proper conſiſtency to make ſugar. When the liquor is taken from the middle kettle into the ſmalleſt, the former muſt be ſupplied, as is before directed, from the largeſt, with freſh ſap. The liquor, in the ſmall kettle, muſt be boiled briſkly, until it gets pretty thick, when the fire ſhould be leſſened, to prevent its burning. When the liquor riſes in the kettle, a piece of butter or fat, the ſize of a hazle nut, may be thrown in; if this quantity does not make it boil flat, more ſhould be added, until it anſwers the purpoſe, and this muſt be repeated as often as the liquor riſes. When it is boiled enough, which may be known by the manner† of its roping between the thumb and finger, it muſt be put into a cooler or tub, when the ſmall kettle muſt be ſupplied with liquor from the middle ſized one, that, with more from the largeſt, and the large one with freſh ſap, as is before directed. When one third of the ſap, that has been collected, is boiled and put into the cooler, it muſt be ſtirred briſkly about with a ſtirring ſtick (which may be made like a ſmall paddle) until it grains, when it may be left (if the buſineſs has been well done) until another third of the liquor is boiled, and put into the cooler: It muſt be then moved about with the ſtirring ſtick, until it is well mixed together—when the remainder of the liquor is boiled and put into the cooler, it muſt again be moved about with the ſtirring ſtick, until the whole is well mixed, when it muſt be put into moulds; earthen would be beſt; but wooden moulds may be made to anſwer the purpoſe, by nailing or pinning four boards together, ſo ſhaped as to make the mould one inch diameter at the bottom, and ten or twelve inches at the top; the length may be two feet, or two feet and an half—theſe moulds muſt be cloſely ſtopped at the ſmall ends, with old coarſe linen, or ſome ſuch thing, and ſet up with ſomething to ſtay them; the ſugar muſt then be taken from the cooler, and poured into the moulds—next morning the ſtoppers muſt be taken out, and the moulds be put on troughs, or ſome veſſel to drain their melaſſes. In the evening, the loaves muſt be pierced at the ſmall ends, to make them run their ſyrup freely—this may be done by driving a wooden pin, (ſhaped like a marling ſpike) three or four inches up the loaf; after which they muſt be left to drain their melaſſes, which will be done in a ſhorter or longer time, according as the ſugar has been boiled.

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* Some liquor ſhould be left in the large kettle, if an iron one, otherwiſe there would be a danger of its ſplitting, upon putting in cold liquor.

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† Dip a ſtick into the liquor, apply the thumb to it, and take part of what adheres to the ſtick, then draw it two or three times between the thumb and finger.

No part of the buſineſs requires greater attention than granulating or graining the ſugar in the cooler, and afterwards frequently obſerving the ſtate it is in—if too thick, it may be remedied by boiling the remaining liquor lower, than that which was boiled before—if too thin, by ſtirring the cooler again, and boiling the remainder of the liquor higher, or more.

A SUGAR BOILER.

Philadelphia, Auguſt 21, 1789.

☞ The making of ſugar is quite common and eaſy with a ſingle kettle of any ſize.